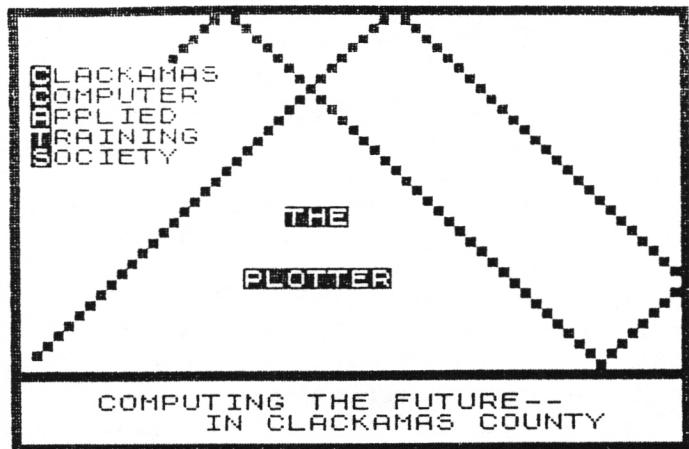


THE PLOTTER

CLACKAMAS COMPUTER APPLIED
TRAINING SOCIETY
NEWS LETTER
* * * *
VOLUME 9 NUMBER 9
* * * * *
SEPTEMBER 1991



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MEETING

The SEPTEMBER meeting will be:

on: FRI., SEPT 13 1991

MEETING open at: 7:00 P.M.

in: COMMUNITY ROOM
FAR WEST FEDERAL BANK
OREGON CITY SHOPPING CENTER

WHAT YOU WILL FIND IN THIS ISSUE:

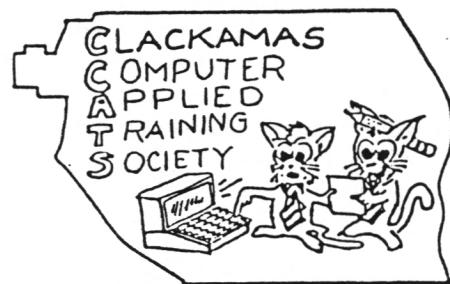
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**FROM THE EDITOR'S
DESK**

Some issues back we had an article on problems the University Of Oregon Continuation Center was having with the copyright law. It seems that programs and manuals were claimed to have been copied without authorization. This branch of the University has in training 300 to 500 students a month. The diversity of programs must be a real problem for a training center.

Six software companies, along with the Software Publishers Association, a computer industry trade association which includes more than 800 major software publishers, had filed the suit.

The suit has been settled with an agreement from the University that a sum of \$130,000 will be paid, plus an agreement that the State System of Higher Education will conduct an education program at all eight of the campuses on the lawful use of copyrighted software. The University recognizes the creators have a right to be assured every user is accessing a licensed version of the software.



Continued from page 1

It seems to The Editor that exorbitant prices have been charged for some software, based on the income of some officials of several software companies. The hobby group of computer users and owners are not in a position to pay some of the prices charged, yet some of the software is essential for the operation of their computers. It may be the fairware and shareware programs are our safest method of obtaining software are a reasonable price. There are many software companies or providers in the PC software business. There should be no problem in purchasing from these companies. For the Sinclair users, there are only a few such companies. It is safer to obtain a licensed version than to gamble on a friendly copy.

The information on this suit was obtained from The Sunday Oregonian paper Section D for August 25, 1991.

BITS & BYTES

by: Rod Gowen

In this column I try to bring you the latest and complete information and news available to me regarding the world of TS computing. One way that I can accomplish this is if I have the support of you, the reader, in collecting news that may be of interest to other readers. If you have any news, rumors or other tidbits of information that fits this description, why not send it along? We will be watching!

POTLUCK A SUCCESS!:

Our August potluck dinner was a fair success. As nearly as I can count, there were about 20 folks there in the 4 hours or so that it lasted. One thing is certain, no one went home hungry! There was so much good food there that I am afraid that I had a bit too much myself. If we could get this response every time, we should have one more often! Sorry about those of you who did not or could not make it. It is your loss!

T/SNUG NEWS-

Our club membership has been paid and I have paid my personal membership fee, have you? If you want the TS community to survive for long, you are the ones who can do it with your support for any and all legitimate endeavors in the TS field. It is my opinion that we NEED a central "committee" of sorts, made up of 1 correspondent from each active TS user group in North America. This is the most active centralized group in my memory. How about writing a couple of reviews or articles and submitting them to me so we can use one in THE PLOTTER and forward the other to T/SNUG for the central newsletter? If only 10% of you stalwart TS users out there would do this in each of your respective groups, we would have such a surplus of material that it would take over a year to use it all up! I'll keep you posted on T/SNUG. To join, write:

Don Lambert
ZXir Qlive Alive! Newsletter
1301 Kiblinger Place
Auburn, IN 48706

You will receive 4 newsletter per year. They will NOT send newsletters on an exchange basis with groups, so do not ask.

RMG NEWS:

RMG has received updated copies of GEORGE CHAMBERS LARKEN UTILITIES as well as OMNIBUS AOS from the Toronto user group. RMG is also going to be marketing a new piece of software from VECTORWARE. A "slideshow" picture viewer for the 2068 and LKDOS systems. Looks interesting. We may be marketing it on a "shareware" basis. You may be able to buy, at a very small cost, a demo version that will be crippled in some ways and try it out. Then, if it looks like something you would like to own, you pay an additional fee and receive a "full-featured" version. RMG hopes that it will work out. Keep watching for availability of SLIDESHOW 2068.

That's it for now!
See you next time. . .

CHINESE FORTUNE CALENDAR

Dick F. Wagner

Several years ago my wife and I were touring in Nova Scotia Province, Canada. We spent one night in the town of Yarmouth, which is on the western tip of Nova Scotia. Yarmouth is the terminal for ferries from Portland and Bar Harbor, Maine. For a change we elected to eat at a Chinese restaurant. Our table place mats carried an interesting Chinese Fortune Calendar. Thinking it would offer an interesting computer program opportunity, I requested a clean one from our waitress. The following program is from this place mat. Any errors cannot be blamed on food spots.

The format of the calendar is 12 messages or fortunes. Each message is given the name of an animal. The messages indicate which animals are most compatible with that particular birth year. There are usually 2 or 3 animals in this category. As the Chinese Zodiac is in 12 year cycles, a series of years, 12 years apart, are associated with each animal. Thus years 1912, 1924, 1936, etc. are associated with the animal Rat. The animals named in order of years are Cock, Dog, Boar, Rat, Ox, Tiger, Hare, Dragon, Snzke, Horse, Sheep, and Monkey (the way I figure it Year 1 seems to be Cock).

The following text was given to explain the use: "The Chinese Zodiac consists of a 12 cycle, each year of which is named after a different animal that imparts distinct characteristics to its year. Many Chinese believe that the year of a person's birth is the primary factor in determining that person's personality traits, physical and mental attributes and degree of success and happiness throughout his lifetime. To learn about your Animal Sign, find the year of your birth among the 12 signs running around the border."

This program produces the appropriate animal and message when you input your birth year. You cannot put all messages on the screen due to space limitations. To read each one it is necessary to input all 12 years, one at a time. One way is to start with a year such as 1921 and then progress one year at a time for 12 years. The screen can then be copied each time to get a printed display.

Note that each animal message ends with a compatible list of other animals. If the messages are hard copied you can pick out the favorable animals, otherwise it is necessary to read it on the screen.

This is interesting to use for seeing how compatible your spouse is, your parents, your children, etc. Try it at a gathering of friends. Maybe you will find that there is a reason that you enjoy some people more than others.

The range of years, 1912-2023, may not cover older people, or if one wishes to go back to earlier times. Just add a series of twelves to the date to bring it within this range, such as for 1896 add 24 and use 1920.

Lines 1912 to 1923 correspond to the first year of each name for ease of checking. Lines 1995, 2005, etc were also for checking and can be deleted after testing the program.

3 REM public domain program
by Dick Wagner, 1991
4 REM Chinese Fortune Calenda
r
10 INPUT "Your birth data? Yea
rs from 1912 to 2023. ";y
20 FOR a=1912 TO 2020 STEP 12
30 IF a=y THEN GO TO 1912
50 NEXT a
100 FOR b=1913 TO 2021 STEP 12
110 IF b=y THEN GO TO 1913
120 NEXT b
200 FOR c=1914 TO 2022 STEP 12
210 IF c=y THEN GO TO 1914
220 NEXT c
250 FOR d=1915 TO 2023 STEP 12
255 IF d=y THEN GO TO 1915
260 NEXT d

Continued from page 3

```
265 FOR e=1916 TO 2012 STEP 12
270 IF e=y THEN GO TO 1916
275 NEXT e
280 FOR f=1917 TO 2013 STEP 12
285 IF f=y THEN GO TO 1917
290 NEXT f
295 FOR g=1918 TO 2014 STEP 12
300 IF g=y THEN GO TO 1918
310 NEXT g
315 FOR h=1919 TO 2015 STEP 12
320 IF h=y THEN GO TO 1919
325 NEXT h
330 FOR i=1920 TO 2016 STEP 12
335 IF i=y THEN GO TO 1920
340 NEXT i
345 FOR j=1921 TO 2017 STEP 12
350 IF j=y THEN GO TO 1921
355 NEXT j
360 FOR k=1922 TO 2018 STEP 12
365 IF k=y THEN GO TO 1922
370 NEXT k
375 FOR l=1923 TO 2019 STEP 12
380 IF l=y THEN GO TO 1923
385 NEXT l
1910 STOP
1912 PRINT "Year of Rat!": GO TO
2000
1913 PRINT "Year of Ox!": GO TO
2010
1914 PRINT "Year of Tiger!": GO
TO 2020
1915 PRINT "Year of Hare!": GO T
O 2030
1916 PRINT "Year of Dragon!": GO
TO 2040
1917 PRINT "Year of Snake!": GO
TO 2050
1918 PRINT "Year of Horse!": GO
TO 2060
1919 PRINT "Year of Sheep!": GO
TO 2070
1920 PRINT "Year of Monkey!": GO
TO 2080
1921 PRINT "Year of Cock!": GO T
O 2090
1922 PRINT "Year of Dog!": GO TO
3000
1923 PRINT "Year of Boar!": GO T
O 3010
1995 REM Year of Rat
2000 PRINT "Rat: You are noted f
or charm and attractiveness fo
r the opposite sex. You wo
rk hard to reach goals and get
possessions. You're thrifty, hon
est, and want things just so.
You get angry easily, but ma
nage to look calm. You get along
best with Dragon, Monkey, Ox."
2005 STOP : REM Year of Ox
```

2010 PRINT "Ox: You are patient,
quiet, and people trust you. No
rmally you are easy going, but
at times you may be stubborn
and a little too quick to get ang
ry. You have an alert mind a
nd body, and hate to fail at anyt
hing. You get along best with
Snake, Cock, Rat."

2015 STOP : REM Year of Tiger
2020 PRINT "Tiger: You are sensi
tive, kind, and a deep thinker.
People respect you because
you are brave. And you alway
s get credit where due. But you ca
n be very short-tempered and s
ometimes have trouble making
up your mind. You get along best
with Horse, Dragon, Dog."

2025 STOP : REM Year of Hare
2030 PRINT "Hare: You are lucky,
talented, and smart in busines
s. You aim for great things and
may win them. You are quiet,
kind, and seldom lose your tem
per, but you like gossip, and you
're some- times sad. You get a
long best with Sheep, Boar, Do
g."

2035 STOP : REM Year of Dragon
2040 PRINT "Dragon: You have goo
d health plus lots of pep and
energy. You get excited easily,
and may get angry easily, too. B
ut people trust you because yo
u are honest, brave, and soft-hea
rted. You're nobody's fool though
, and you never borrow money o
r make speaches. You get al
ong best with Rat, Monkey, Co
ck."

2045 STOP : REM Year of Snake
2050 PRINT "Snake: You are very
deep, quiet, and wise. You're luck
y with money, too, and neve
r have to worry about it. You
are kind to others, but not apt
to be very generous with them.
You are a very determined pers
on and hate to fail. You get alo
ng best with Ox, Cock."

2055 STOP : REM Year of Horse
2060 PRINT "Horse: You are chear
ful, popular and smart with money
, but you may be too talkative
and showy. You are wise, talent
ed, and good with your hands. Cro
wds, fun, and action attract y
ou, and you like the opposite se
x. You get along best with Tige
r, Dog, Sheep."

Continued from page 4

2065 STOP : REM Year of Sheep
2070 PRINT "Sheep: You like nice things, and may become an artist or musician. You are very religious and have strong beliefs. Yet you may be shy, timid, and somewhat puzzled by life. Your abilities make money for you. You get along best with Hare, Boar, Horse."

2075 STOP : REM Year of Monkey
2080 PRINT "Monkey: You're apt to be clever, and may have a bit of genius. You like to invent things, solve hard problems and think up new ideas. You're a good thinker and want to know all about things. You may become famous. You get along best with Rat, Dragon."

2085 STOP : REM Year of Cock
2090 PRINT "Cock: You're a deep thinker with much ability and talent. You like to keep busy, you try hard and you hate to fail. You'd rather work hard by yourself than with others and your fortunes swing high, or low. You get along best with Ox, Snake, Dragon."

2095 STOP : REM Year of Dog
3000 PRINT "Dog: You're truthful, loyal, and people trust you, because you stand up for what is right, and you can keep secrets. You don't care much for wealth, but you seem to have enough. You get along best with Horse, Tiger, Hare."

3005 STOP : REM Year of Boar
3010 PRINT "Boar: You're quiet and study a lot because you want knowledge. You do all things with all your strength. You don't make many friends, but you keep those you make because you're honest, kind, and true to others. You get along best with Hare, Sheep."

CORRECTION

The July issue of The Plotter carried an article titled "THANKS FOR THE MEMORY". Reference to "BIGGS" given as the name of the company and the Bulletin, should have been "BUGGS".

LOTTO

By - Bob Evans

Here is a program for picking lottery numbers. Line 120 can be changed to reflect the amount of numbers they are drawing from. Line 155 is to tell me whether I am using MEGA BUCKS or LOTTO AMERICA. I make a program for each.

```
1 BORDER 4: PAPER 0: CLS : PA  
PER 1: INK 6  
2 FOR x=0 TO 31 STEP 2  
3 PRINT FLASH 1; AT 0,x; CHR$ 1  
43; CHR$ 128; AT 21,30-x; CHR$ 128;  
CHR$ 143  
4 IF x<22 THEN PRINT FLASH 1;  
AT x,0; CHR$ 143; AT x+1,0; CHR$ 12  
8; AT 20-x,31; CHR$ 128; AT 20-x+1,  
31; CHR$ 143  
5 NEXT X  
10 RANDOMIZE : PAPER 0: INK 7  
20 INPUT "How many lines (1-10  
)? "; q: IF q>10 THEN GO TO 20  
30 FOR g=1 TO q  
40 DIM s(44)  
50 FOR n=1 TO 6  
60 LET a=1+INT (RND*44)  
70 IF NOT s(a) THEN LET s(a)=a  
: GO TO 90  
80 GO TO 60  
90 NEXT n  
100 PRINT AT 9*2,5;"(";g;") " ;  
110 LET c=0  
120 FOR n=1 TO 44  
130 IF s(n) THEN LET c=c+1: PRI  
NT s(n); "," AND c<6;  
140 NEXT n  
150 BEEP .01,20: PRINT ""  
155 PRINT AT 1,11;"SECRET"  
160 NEXT g: PRINT "#1;AT 1,10;"G  
ood LUCK!!"  
170 PAUSE 0: GO TO 1: STOP  
9999 RANDOMIZE USR 100: SAVE "me  
ga.B1" LINE 1
```

Use this program to calculate the comparative cost of gasoline in another country, such as Canada.

This program fits computers from ZX 81 thru 2068 and Spectrum. The formula given in line 80 can be used on a hand calculator.

cost/liter, cents (c)55.6

rate of exchange US currency to Canadian currency, (r) 0.864

(c/r/.2642)/100=cost US dollars per gallon where .2642 is the conversion of liters to gallons

cost per gallon, US=\$1.818

5 REM Program by Dick Wagner, 1991

10 REM method for converting cost of Canadian gasoline to cost per gallon in US currency

20 REM you must know the rate of exchange, US currency to Canadian Currency (currently less than 1)

Continued from page 5

```
30 REM you must know the rate
in cents per liter of gasoline.
40 PRINT "cost/liter, cents (c
)");
45 INPUT c: PRINT c: PRINT
50 PRINT "rate of exchange US
currency to Canadian currency, (c
)";
55 INPUT r: PRINT r: PRINT
60 PRINT "(c*r/.2642)/100=cost
US dollars per gallon where .26
42 is the conversion of liters
to gallons"
65 PRINT
70 PRINT "cost per gallon, US=
$";
75 REM round cost to 3 places
80 LET x=(c*r/0.2642)/100
100 REM method for rounding
cents up and limiting cents to 3
decimal places.
110 LET x$=STR$(.01*SGN x*(INT
(1000*ABS x+0.5)+.1)/10)
120 PRINT x$( TO LEN x$-1)
```

PHONE NAMES

By Dick Wagner

A 2068 program adapted from a TS 1000 program. Changes are given to revert back to the TS 1000 program.

This program appeared in the SYNCRO-SETTE magazine (October 1983) in the early days of the TS 1000 computer. It is based on randomly selecting any of 3 letters assigned to each of the telephone key pad numbers except 0 and 1. The phone company apparently never found a way to give these numbers letters. Also, letters Q and Z are not used so don't expect them to show up in any word combinations.

The program as set up makes 3 letter words from the first 3 digits. Change line 100 to B=4 TO 7 if the last 4 digits are to make the words. Likewise, for 7 letter words change this line to B=1 TO 7. Also a group of numbers, such as 2 TO 6 can be selected with B=2 TO 6. One might change the program to select these combinations by INPUT.

This program is not one of those intelligent programs that will actually select useable words to display on the screen. It is up to the operator to locate such words visually.

Input can use either a space or "-" between the set of 3 digits and 4 digits, the program doesn't care

The use? Interesting for people who might wonder if their phone numbers might contain useable words such as sometimes appear in advertising. Try it at a party sometime. Let people know that your computer is "smart and useful".

If an interesting word is spotted, press "P" to pause. If you want a screen dump, press "Z" or the COPY key. Press the ENTER key to continue, and press "C" to continue with another sample number input.

Make these changes and additions to get the TS 1000 program:

Add LINE 40 SCROLL
LINE 80 SCROLL

Change LINE 140 with <30 and >37 for the proper codes.

Add LINE 220 SCROLL

Change LINE 250 to PAUSE 40000

```
10 LET C=0
20 CLS
30 LET N$="ABCDEFGHIJKLMNOPRST
UVWXY"
50 PRINT "ENTER YOUR PHONE NUM
BER"
60 INPUT T$
70 IF LEN T$=8 THEN LET T$=T$(T
O 3)+T$(5 TO 8)
90 FOR A=1 TO 3
100 FOR B=1 TO 3
110 IF INKEY$="P" THEN GO TO 25
0
120 IF INKEY$="C" THEN GO TO 10
130 IF CODE T$<50 OR CODE T$>57
THEN GO TO 160
150 PRINT N$((VAL T$(B)-1)*3-IN
T (RND*3));
160 NEXT B
170 PRINT " ";
180 LET C=C+1
190 NEXT A
200 IF C/4=INT (C/4) THEN GO TO
220
210 GO TO 90
230 LET C=0
240 GO TO 90
250 PAUSE 0
260 GO TO 130
```

the plotter

pc page

by: Rod Gowen

How much disk space have you saved? What! What's that? What am I talking about? Shame on you! I would hope that you would not forget what I wrote about last month this soon! If you really cannot remember, maybe you had better re-read last month's article. Meanwhile, I will continue with this month's piece. I only hope I am not keeping you from something more important. If not, read on.

JADU - Stands for "Just Another Directory Utility". One of our group members gave me a copy of this GREAT little utility package a couple of weeks ago and, after only a couple of days of use, I sent in my \$25.00 registration fee! I am truly impressed. I know, I know! There are a whole passle of DOS utility packages out there. I have tried at least 10 of them myself. Of all of them, this is the easiest one to use that I have tried yet! Admittedly, it may not have as many bells and whistles as PC-TOOLS or Norton Utilities, but it does just about everything I need to do and is so uncomplicated to use. The F1 key brings up the help page with all of the things that you can do with the keys. Not only does it do all of the standard things like renaming and copying files, but it will also allow you to hook into your favorite file editor as well as an archiving shell of your choice. You can PRINT files, execute files, edit files, copy files, rename files and delete files. Many of these functions can be used on directories as well as files.

I found out the hard way just how powerfull (and dangerous) this program can be the other day while moving some directories around on my hard drive. I was cruisin' along, moving files, deleting files and directories and not reading all of the warning signs popping up on screen and before I knew what had happened, I had deleted EVERY FILE IN MY ROOT DIRECTORY! Including the system files and COMMAND.COM! If I did not keep such current backups of my hard drive, I would have been in trouble. As it was, all I had to do was to restore the root directory from the latest backup and I was saved. The program does tell you and warn you what it is about to do, even giving you 2 chances to turn back. So read the warnings and be sure of what is going on and you will not be in my predicament.

All in all, as I said before, for ease of use and low cost, JADU is really hard to beat. I have paid up to \$50 for a utility package and have not enjoyed using it as much as I do this one. If you would like a copy of it, let me know. It is in my shareware library.

Keep watchin' More to come next time!

This article is from the Bugs Bulletin, V1, No 2, written by Dan Sweet of Bugs Warehouse Computers/CSI Systems, Inc., Portland, Oregon.

CPU's I've Known & Loved

Working at Bugs, I am often asked questions like "Why should I buy a 386 instead of a 286?", or "What is the difference between the 386SX and the 386DX?". I would like to explain some of these differences and give you a little history behind the different types of CPU's used in IBM compatible systems.

>>>

Continued from page 7

All computers store information in a format known as binary. Binary is a numbering system that only has two digits, one and zero. The easiest way to think about binary numbers is to imagine a light bulb. If the light is on, you have a binary one. If the light is off, you have a binary zero. You have to wonder about the usefulness of a numbering system when you can only count to 1!

A single light bulb can be a useful signal if the meaning of on and off are arranged beforehand. Your porch light being on could mean that you are home and would not mind if company stops by. The light off may mean you are asleep and do not want any visitors. This system can work, but the usefulness of it could be expanded by adding more lights. You could put two lights up giving you four possible states. Computers group their lights, or bits as they are called in computer talk, in to units of eight called bytes's. Eight bits gives you 256 possible combinations.

The early microprocessor systems used CPU's that could only operate on eight bits or one byte at a time. Some popular 8-bit CPU's were the Intel 8080 and 8085, the Zilog Z-80, Motorola MC6800, and the Signetics 6502. These CPU's had 8-bit data paths called a bus. The address bus is used to select which one of many bytes the CPU wants to use. The address busses were 16-bits wide. A 16 bit number allows a maximum of 65,536 locations to store data. This data is stored in a place called a RAM (short for Random Access Memory). Computer people use the suffix 'K' meaning Kilo to indicate 1024 bytes of information. If you divide 65,536 by 1024 you get 64K.

A short time after these 8-bit CPU's came out, people found themselves being limited by the amount of information they could store, or the size of numbers they could work with. The companies that designed the CPU's increased the size of the data bus, and the internal parts called registers, to handle 16-bit numbers. They also increased the size of the address bus. In the case of Intel's 8086 CPU, the address was expanded to 20 bits. This allowed the system to have a whopping 1 million bytes of RAM.

About this time, IBM figured out that a 'Personal Computer' might be a neat thing. They decided to use a CPU from Intel called the 8088, a variation on one of the first 16-bit CPU's. The 8088 had the same range and the same internal 20-bit or 1 Megabyte address range and the same path as the 8086. The difference was the external data path. The 8088 used the old style data bus to memory. This allowed computer designers to use simpler, and cheaper memory and input/output devices with the power of the more expensive 16-bit systems. The penalty of this design is that it takes two steps or cycles to talk to memory. Slightly slower than the real 'thing'.

Due to the design of the first IBM PC operating system, the maximum amount of RAM available to the user is 640K bytes.

Programmers and computer users being what they are asked for more. More RAM, bigger numbers, faster computers. Intel responded to these wants by making the 80286 processor. The 286 still had the 16-bit data bus, but the addressing was expanded to 24 bits. The 24-bit address bus allows 16 Meabytes of RAM. >>>

Continued from page 8

Along with the extra memory addressing ability of the 286, Intel also built in what is called a memory management unit. The MMU allows special types of programs to take control of the computer and manage system functions. This system program allows several programs to run at the same time (multi-tasking) without worrying about program A messing up program B.

When Intel designed the 286 they were smart. They made sure that any program written for the older slower 8086/8088 would run on the faster 80286. The extra memory and system protection features of the 286 required programs designed to take advantage of these features. IBM's DOS, and Microsoft's DOS did not use these advanced features. There was one other small hitch. Programmers attempting to use the new whizzy features found that Intel had made a few mistakes. Even Intel admitted that the 286 was 'brain dead'. This left us with essentially a faster version of the original PC called the AT for Advanced Technology.

When they had finished with the 286, Intel set out to make a newer, faster, more capable CPU without the mistakes. The result was the 80386. This CPU was designed from scratch to be used as a multi-tasking machine. Oh Yea, they also expanded both the address and data bus to a full 32 bits. If you are counting that's four billion bytes (4 Gigabytes) of memory. This new CPU was also much faster than previous versions of Intel CPU's. It is also 100% compatible with programs written for older units.

Intel also decided that it would be neat to have several PC's on your desk. What they did was to build a special set of program instructions in the 386 that allows you to have essentially several mini-8086's inside the 80386 CPU.

People loved the speed and power of the 386. They did not care for the price. Designing full 32-bit memory systems was rather expensive. Intel helped out by making a new version of the 386 called the 386SX. The SX unit is exactly like the original 386 (now called the 80386DX) but the data bus is 16 bits wide rather than 32. Sound familiar?

The 386SX allows programmers and users to have all the power and memory capability of the full 386DX at a lower price with a slight reduction in speed.

What does all of this mean to you the user? Well, the 8086/88 is pretty much dead as far as PC's go, and the 286 is well on its way to the bone yard. The price difference between 286 and 386SX systems is slight, usually around \$150 to \$200. Given the advanced features of the SX and the slight price difference, most people opt for the SX.

With the recent release of the 486 CPU we can expect the 286 to fade even faster. The 486 is an extremely fast version of the 386DX with a special chip called a math co-processor built in. The math co-processor along with a few other enhancements allows the 486 to run at blinding speed by today standards. The power user will find the 486 refreshingly fast.

- NOTICE -

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ROD GOWEN (TREASURER)
1419 1/2 7TH STREET
OREGON CITY, OR 97045
A0003:12<91/ML